

In the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A portable weather detection and alarm device comprising:

an electromagnetic signal receiver that receives digital time signals and electromagnetic signals produced by ~~lightning~~; lightning, wherein the digital time signals are transmitted to and received by the electromagnetic receiver at a stable fixed carrier frequency
5 and the electromagnetic signals produced by the lightning are concentrated about the fixed carrier frequency and received at substantially the fixed carrier frequency;

a processor communicably connected to the electromagnetic signal receiver that processes the received time signals to determine accurate time data for display thereof on a display, and processes the electromagnetic signals produced by lightning to determine when an
10 atmospheric event has ~~occurred~~; and occurred, and is operable to distinguish the received electromagnetic signals produced by the lightning from received digital time signals; and

an alarm connected to said processor that indicates the occurrence of an atmospheric event.

2. (Original) The portable weather detection and alarm device of claim 1 further comprising a display connected to said processor.

3. (Original) The portable weather detection and alarm device of claim 1 wherein said electromagnetic signal receiver receives electromagnetic signals at a frequency of about 60 kilohertz.

4. (Original) The portable weather detection and alarm device of claim 1, wherein said electromagnetic signal receiver receives digital time signals at a frequency of about 60 kilohertz.

5. (Original) The portable weather detection and alarm device of claim 1, wherein said electromagnetic signal receiver receives electromagnetic signals and digital time signals at a frequency of about 60 kilohertz.

6. (Previously Presented) The portable weather detection and alarm device of claim 1, wherein said processor discriminates man-made electromagnetic signals from electromagnetic signals produced by lightning.

7. (Original) The portable weather detection and alarm device of claim 1, wherein said processor detects the frequency of noise bursts to determine the approach of atmospheric phenomenon.

8. (Original) The portable weather detection and alarm device of claim 1, wherein said processor detects the intensity of noise bursts to determine the approach of atmospheric phenomenon.

9. (Original) The portable weather detection and alarm device of claim 6 wherein said discrimination is based on signal aperiodicity.

10. (Original) The portable weather detection and alarm device of claim 1, further comprising a barometric pressure sensor connected to said processor.

11. (Original) The portable weather detection and alarm device of claim 10 wherein said processor receives barometric pressure signals from said barometric pressure sensor and said processor measures changes in barometric pressure and uses said changes in barometric pressure to determine when an atmospheric event has occurred.

12. (Original) The portable weather detection and alarm device of claim 10 wherein said processor receives barometric pressure signals from said barometric pressure sensor and said processor uses said barometric pressure signals to determine when an atmospheric event is likely to occur.

13. (Original) The portable weather detection and alarm device of claim 1 further comprising a battery sensor connected to said processor.

14. (Original) The portable weather detection and alarm device of claim 1 wherein said processor determines when atmospheric events are unlikely and said processor periodically causes said portable weather detection and alarm device to power off when atmospheric events are unlikely.

15. (Original) The portable weather detection and alarm device of claim 14 wherein said portable weather detection and alarm device remains powered when said processor determines that atmospheric events are not unlikely.

16. (Original) The portable weather detection and alarm device of claim 1, wherein said alarm is an audible signal.

17. (Original) The portable weather detection and alarm device of claim 1, wherein said alarm is a visual indicator.

18. (Original) The portable weather detection and alarm device of claim 1, wherein said processor determines the type of atmospheric event that has occurred and the alarm indicates the type of atmospheric event.

19. (Original) The portable weather detection and alarm device of claim 1 further comprising a temperature sensor connected to said processor.

20. (Original) The portable weather detection and alarm device of claim 19 further comprising a display connected to said processor wherein said display visually indicates a temperature signal received by the processor from said temperature sensor.

21. (Original) The portable weather detection and alarm device of claim 1, further comprising an altimeter connected to said processor.

22. (Original) The portable weather detection and alarm device of claim 1, further comprising a compass connected to said processor.

23. (Original) The portable weather detection and alarm device of claim 1, further comprising an external port connected to said processor.

24. (Original) The portable weather detection and alarm device of claim 23, wherein said external port provides connection between the processor and a digital device, such that data may be communicated from the digital device to the processor.

25. (Original) The portable weather detection and alarm device of claim 24, wherein said digital device is a computer.

26. (Original) The portable weather detection and alarm device of claim 24, wherein said digital device is a personal digital assistant.

27. (Original) The portable weather detection and alarm device of claim 24, wherein said digital device is a cellular telephone.

28. (Original) The portable weather detection and alarm device of claim 1, further comprising a global positioning system receiver connected to said processor.

29. (Original) The portable weather detection and alarm device of claim 1, wherein said receiver further receives audible radio signals.

30. (Original) The portable weather detection and alarm device of claim 29, wherein said audible radio signals are broadcasts of audible weather information.

31. (Currently Amended) A weather detection and alarm process comprises the steps of:

receiving electromagnetic ~~signals~~; signals and time signals, wherein the time signals are received at a stable fixed carrier frequency and the electromagnetic signals are
5 concentrated about the fixed carrier frequency and received at substantially the fixed carrier frequency;

discriminating man-made electromagnetic signals from atmospheric event electromagnetic signals caused by lightning; ~~and~~

10 distinguishing the electromagnetic signals caused by lightning from the digital time signals; and

indicating an atmospheric event when atmospheric event electromagnetic signals are received.

32. (Original) The weather detection and alarm process of claim 31 wherein said electromagnetic signals are received at a frequency of about sixty kilohertz.

33. (Original) The weather detection and alarm process of claim 31 wherein said electromagnetic signals include digital time signals.

34. (Original) The weather detection and alarm process of claim 31 wherein said step of discriminating includes determining periodicity of the received electromagnetic signals.

35. (Original) The weather detection and alarm process of claim 31 further comprising the step of measuring temporal distribution of electromagnetic signals to determine if an atmospheric phenomenon is approaching.

36. (Original) The weather detection and alarm process of claim 31 further comprising the step of measuring changes in intensity of electromagnetic signals to determine if an atmospheric phenomenon is approaching.

37. (Original) The weather detection and alarm process of claim 31 wherein said step of indicating is performed using a visual display.

38. (Original) The weather detection and alarm process of claim 31 wherein said step of indicating is performed using an audible alarm.

39. (Original) The weather detection and alarm process of claim 31 further comprising

the step of determining a type of atmospheric phenomenon.

40. (Original) The weather detection and alarm process of claim 39 wherein said step of indicating further comprising indicating the type of atmospheric phenomenon.

41. (Original) The weather detection and alarm process of claim 31 further comprising the step of measuring barometric pressure.

42. (Original) The weather detection and alarm process of claim 41 further comprising the step of measuring the rate of change of barometric pressure.

43. (Original) The weather detection and alarm process of claim 41 further comprising the step of indicating the likelihood of an atmospheric event when the barometric pressure has a predetermined value.

44. (Original) The weather detection and alarm process of claim 42 further comprising the step of indicating an atmospheric event when the rate of change of barometric pressure has a predetermined value.

45. (Original) The weather detection and alarm process of claim 31 further comprising the step of receiving global positioning signals and displaying a location based on the received global positioning signals.

46. (Original) The weather detection and alarm process of claim 31, further comprising the step of receiving radio broadcasts and audibly playing the radio broadcasts.

47. (Original) The weather detection and alarm process of claim 46, wherein said radio broadcasts are NOAA weather broadcasts.

48. (New) A portable weather detection and alarm device comprising:
a single electromagnetic signal receiver that receives digital time signals and

electromagnetic signals produced by lightning; wherein said receiver is operable to receive said electromagnetic signals and digital time signal at substantially 60KHz;

a barometric pressure sensor that detects atmospheric pressure;

a processor communicably connected to said electromagnetic signal receiver and said barometric pressure sensor, wherein said processor processes said atmospheric pressure and said electromagnetic signals produced by lightning to determine when an atmospheric event has occurred, and wherein said processor creates an alarm threshold based on dynamic weighting of both atmospheric pressure and said electromagnetic signals, said processor operable to distinguish the electromagnetic signals produced by lightning from the received digital time signals for display on a display of information related to the received digital time signal; and

an alarm connected to said processor that indicates the occurrence of an atmospheric event.